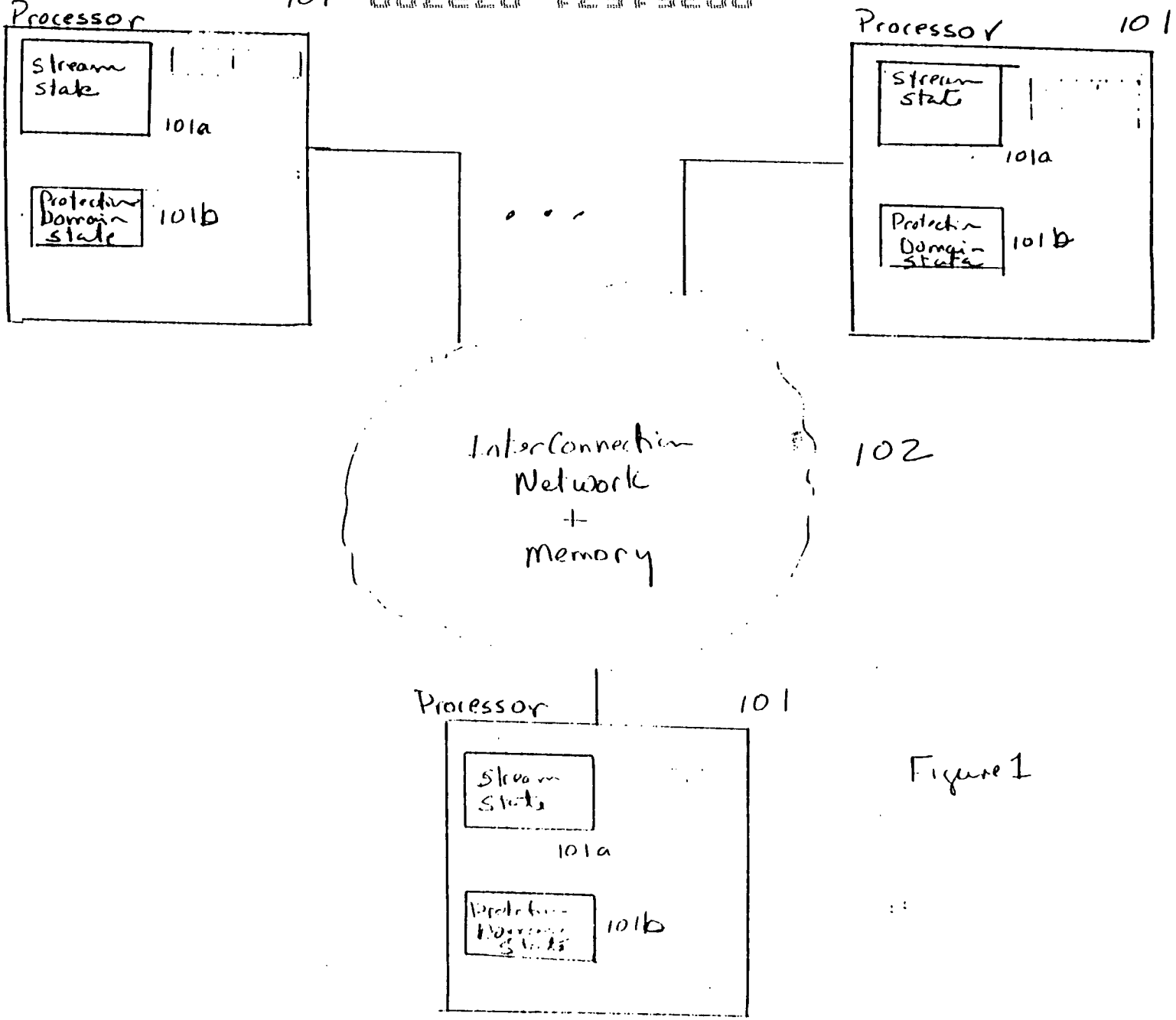

Processor
101
Stream state
101a
Protection Domain state
101b
Processor
101
Stream state
101a
Protection Domain state
101b
Interconnection Network + Memory
102
Processor
101
Stream state
101a
101b

Figure 1

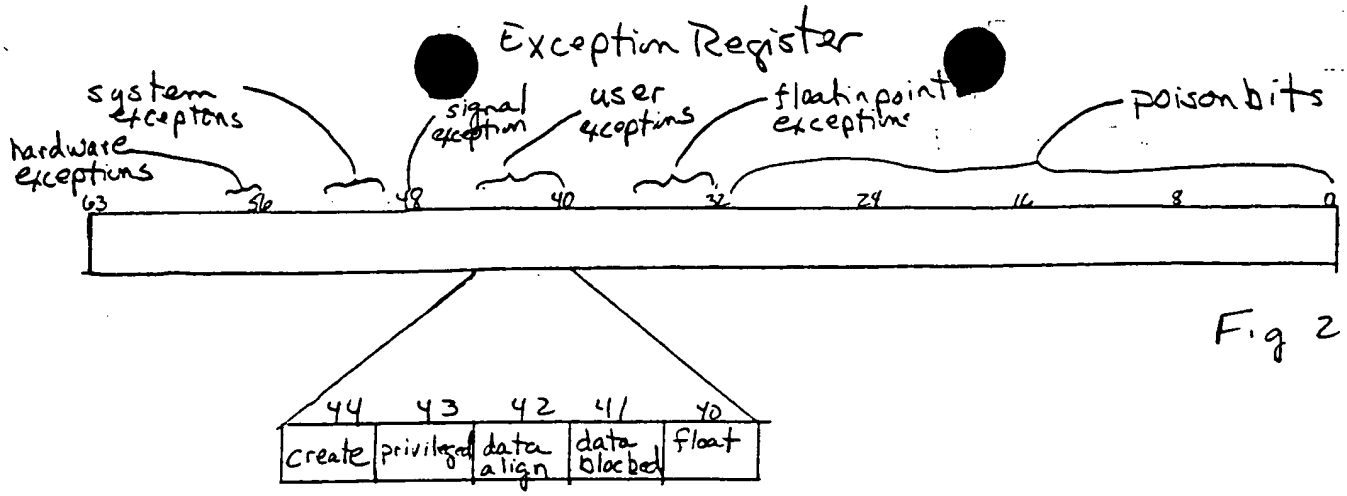


Fig 2A

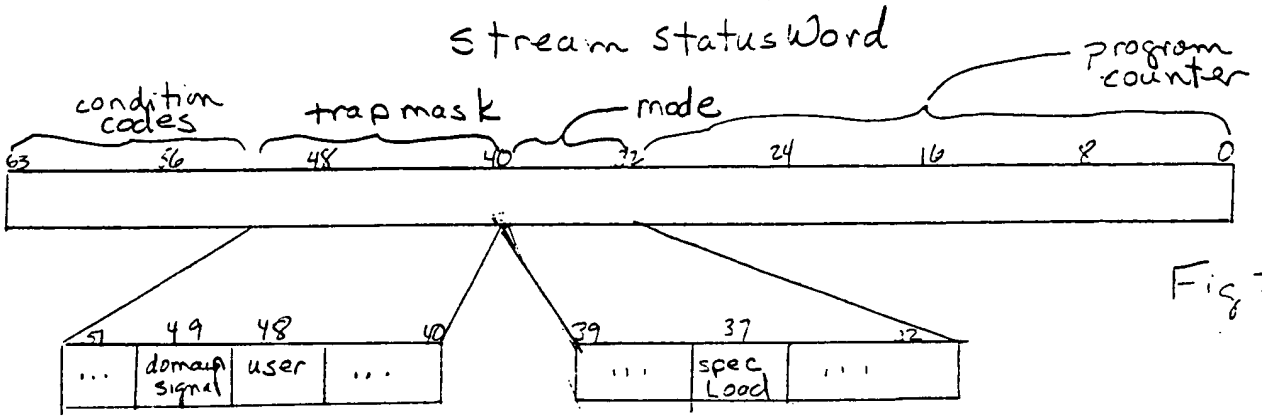


Fig 2B

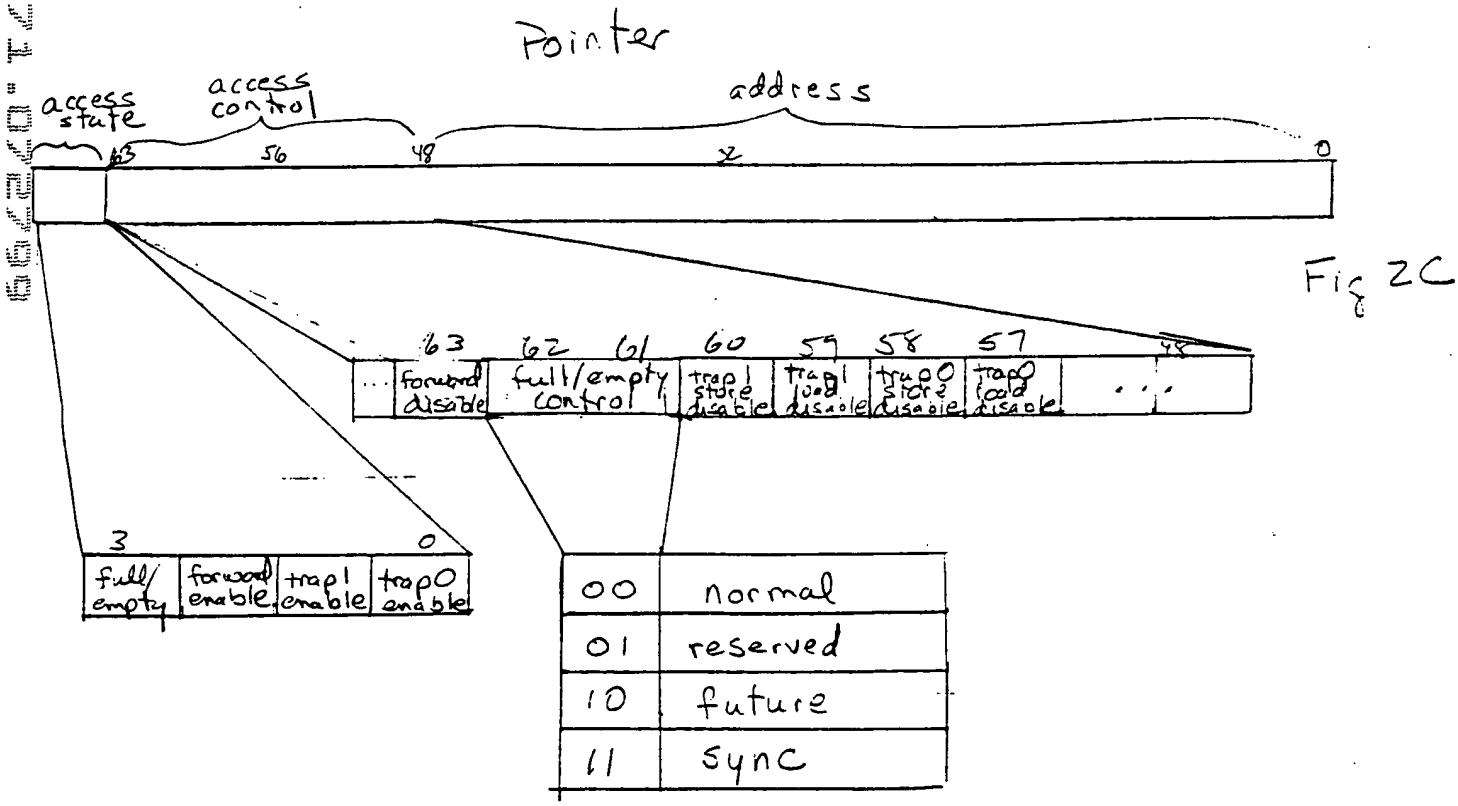
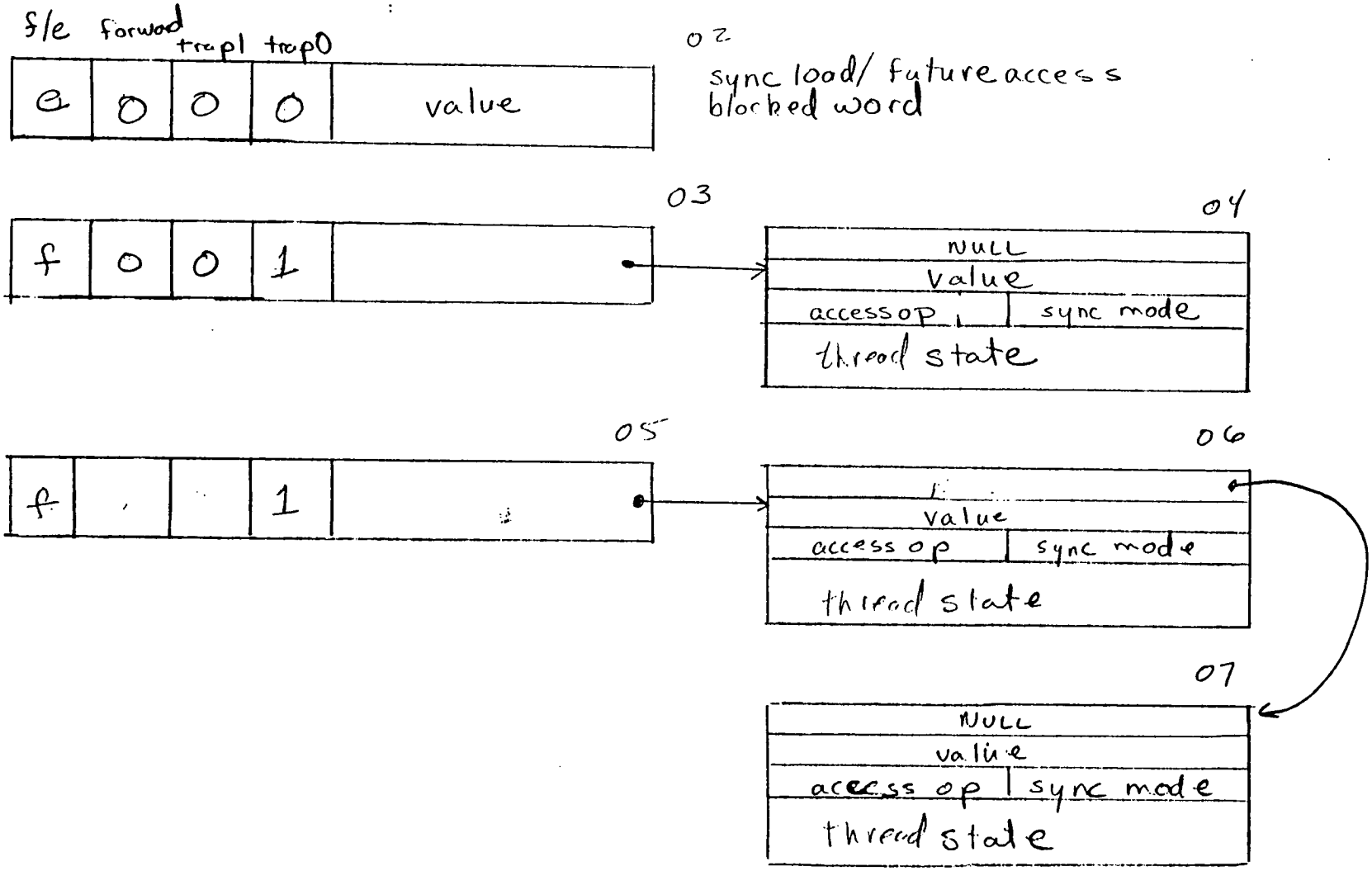


Fig 2C

Fig 3



0936671.072799

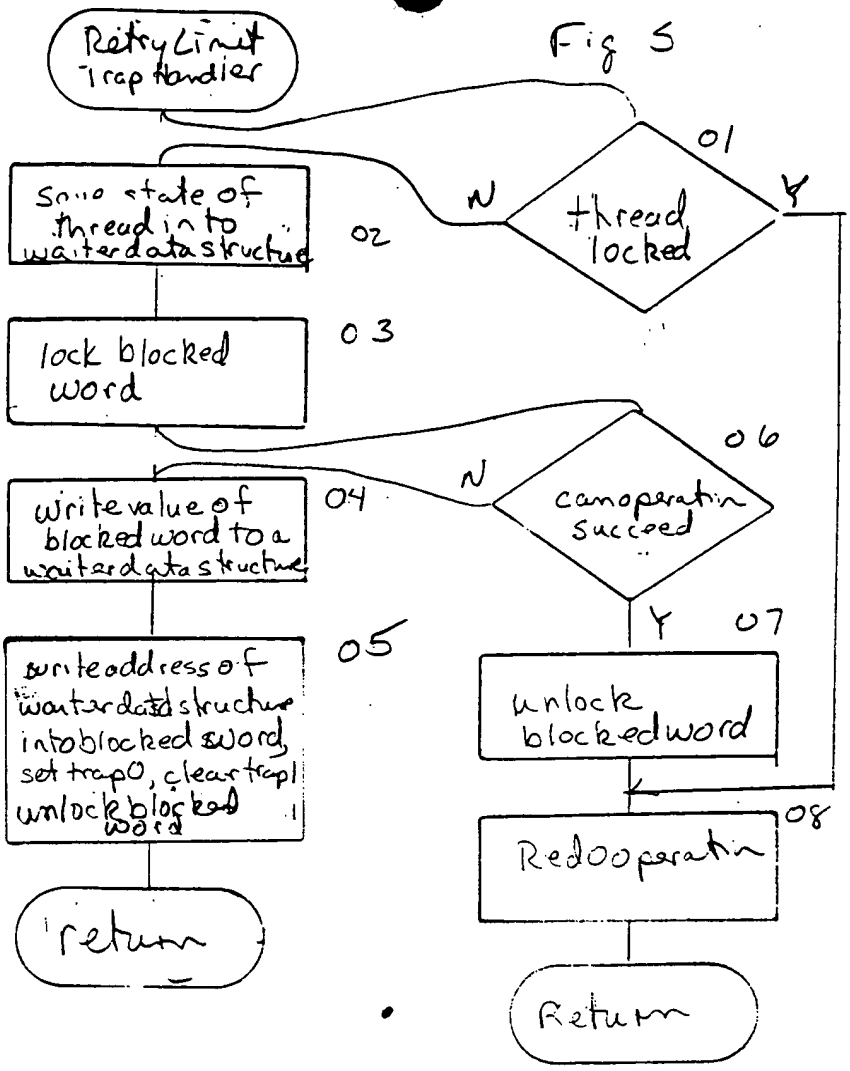
Fig 4

01

sync mode / current f/e	load			store		
	normal	sync	future	normal	sync	future
full	suceed	suceed	suceed	suceed	block	suceed
	full	empty *	full	full	N/A	full
empty	suceed	block	block	suceed	suceed	block
	empty	N/A	N/A	full *	full *	N/A

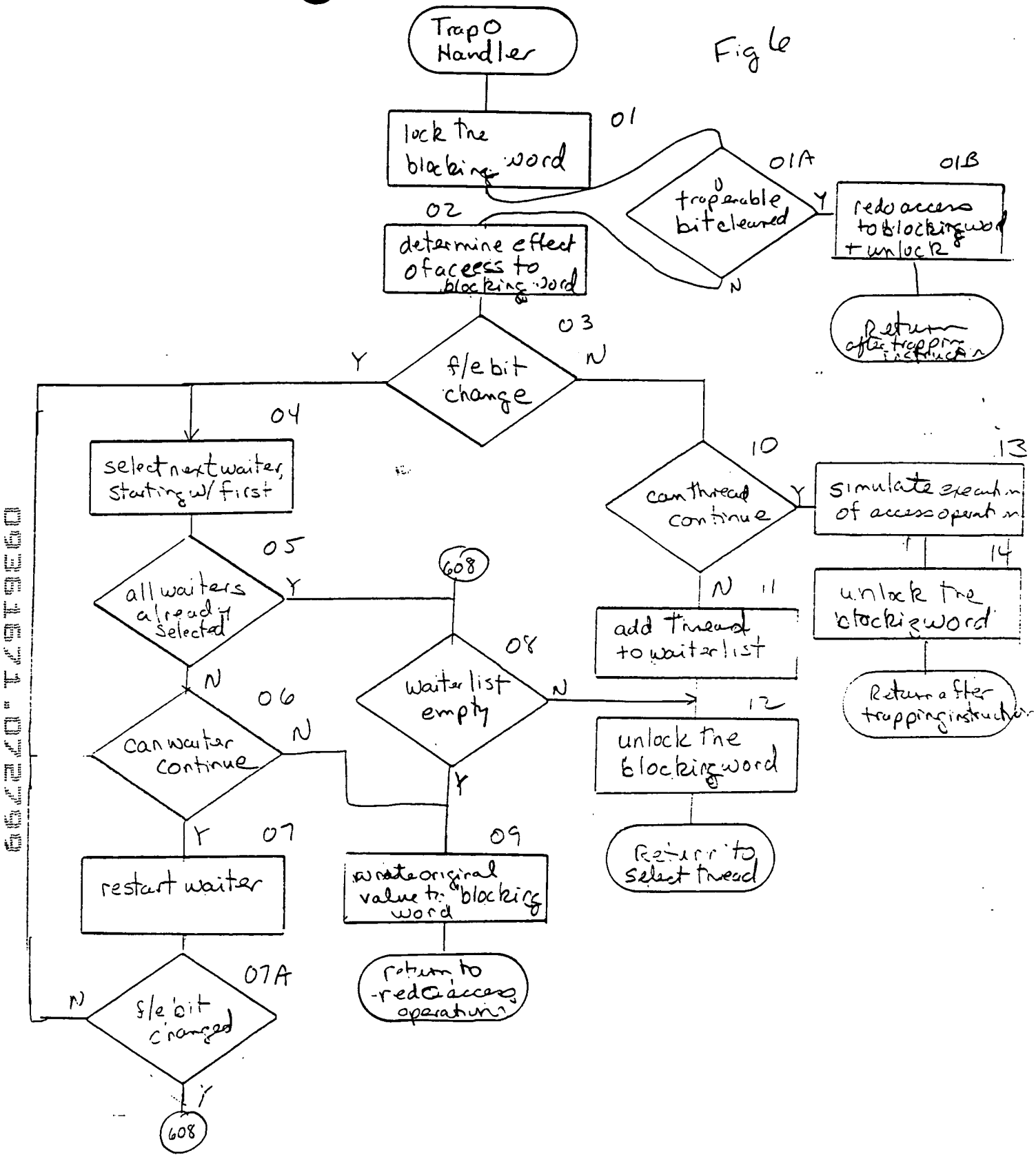
0936671.07279

Fig 5



Docket No. 50277-0409

Fig 6


Trap 0 Handler
lock the blocking word
01
01A
trap enable bit cleared
Y
N
01B
redo access to blocking word + unlock
Return after trapping instruction
02
determine effect of access to blocking word
03
f/e bit change
Y
N
04
select next waiter, starting w/ first
05
all waiters already selected
Y
N
608
06
can waiter continue
N
Y
07
restart waiter
07A
f/e bit changed
N
Y
608
08
waiter list empty
N
Y
09
write original value to blocking word
return to redo access operation
10
can thread continue
Y
N
11
add thread to waiter list
12
unlock the blocking word
Return to select thread
13
simulate execution of access operation
14
unlock the blocking word
Return after trapping instruction

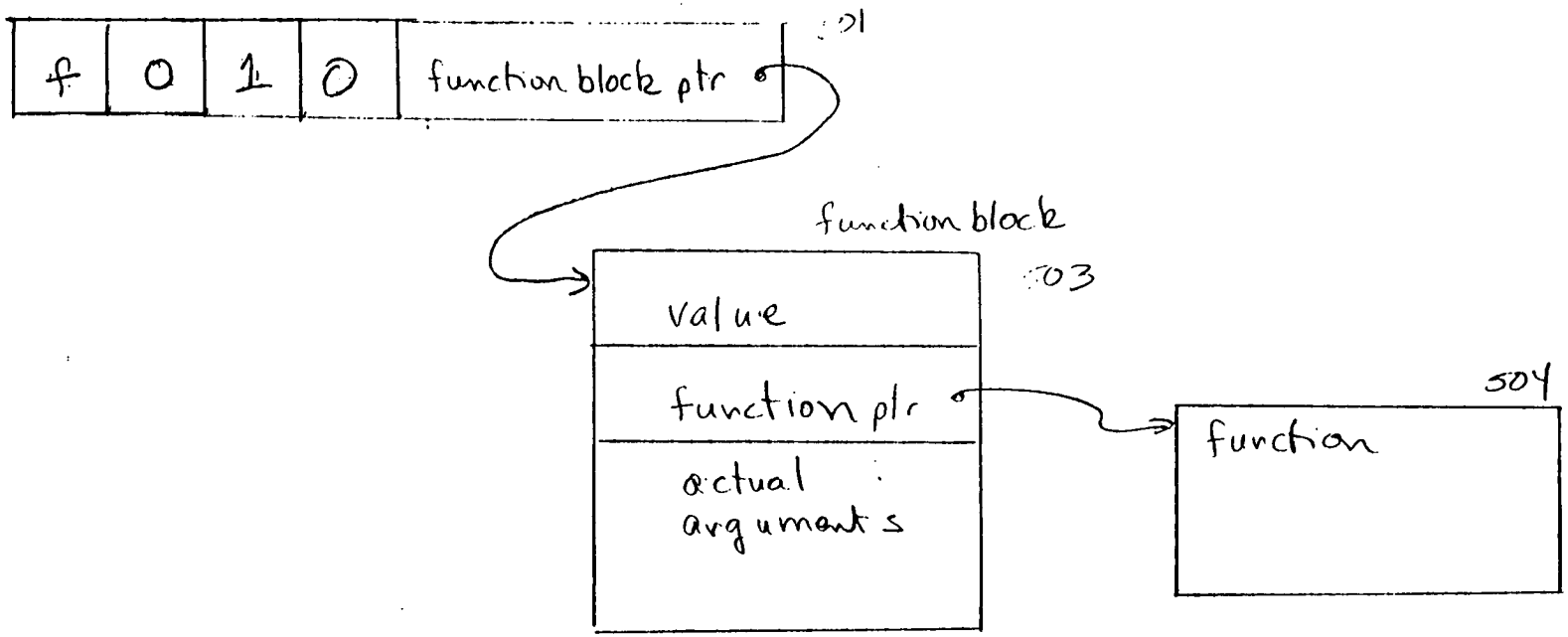
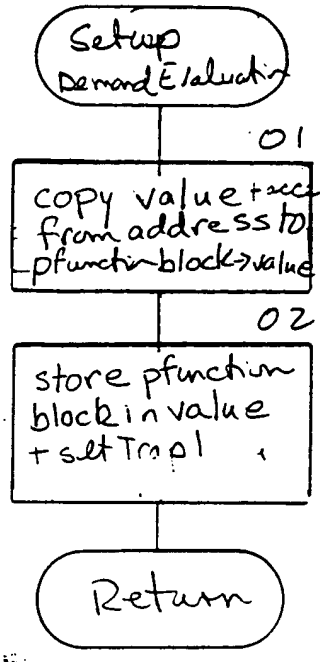

f
0
1
0
function block ptr
501
function block
503
value
function ptr
actual arguments
504
function
f
0
0
0
calculated data value
502

Fig 7



Document: 0060-0004-0000

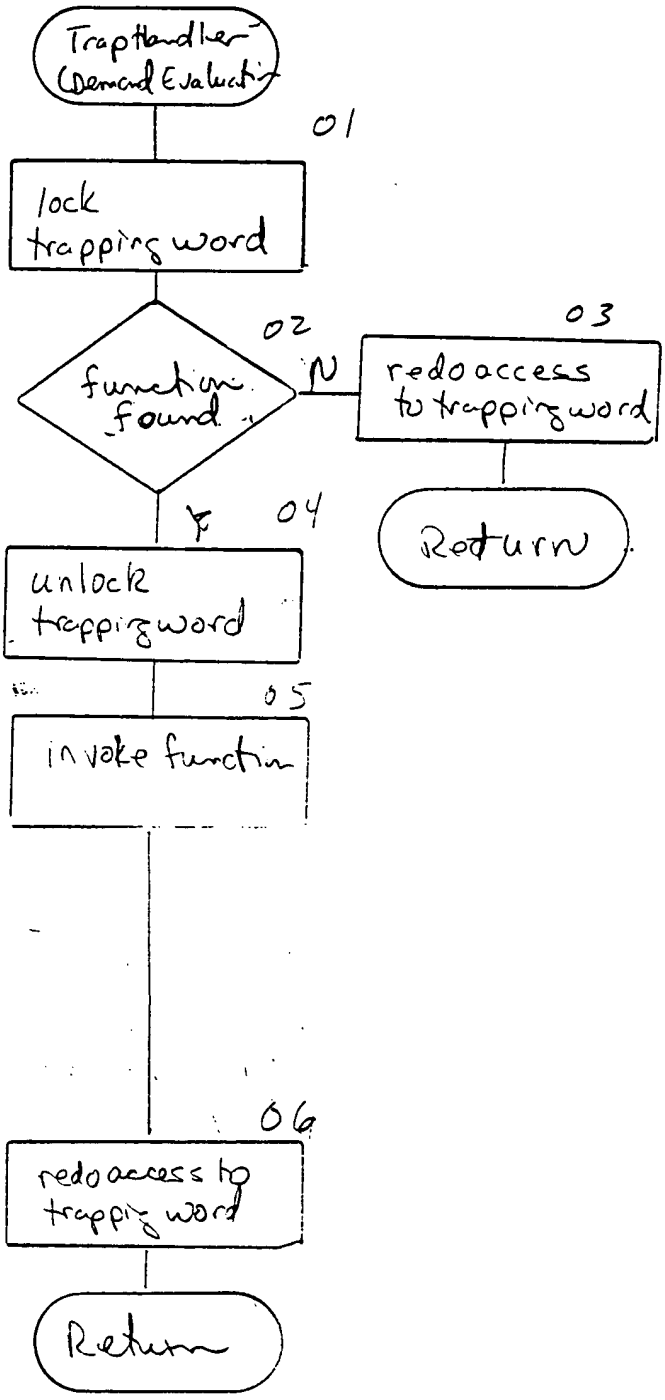


Fig 9

0 6 3 2 0 3 0 . 0 2 5 6 5 9 0 9

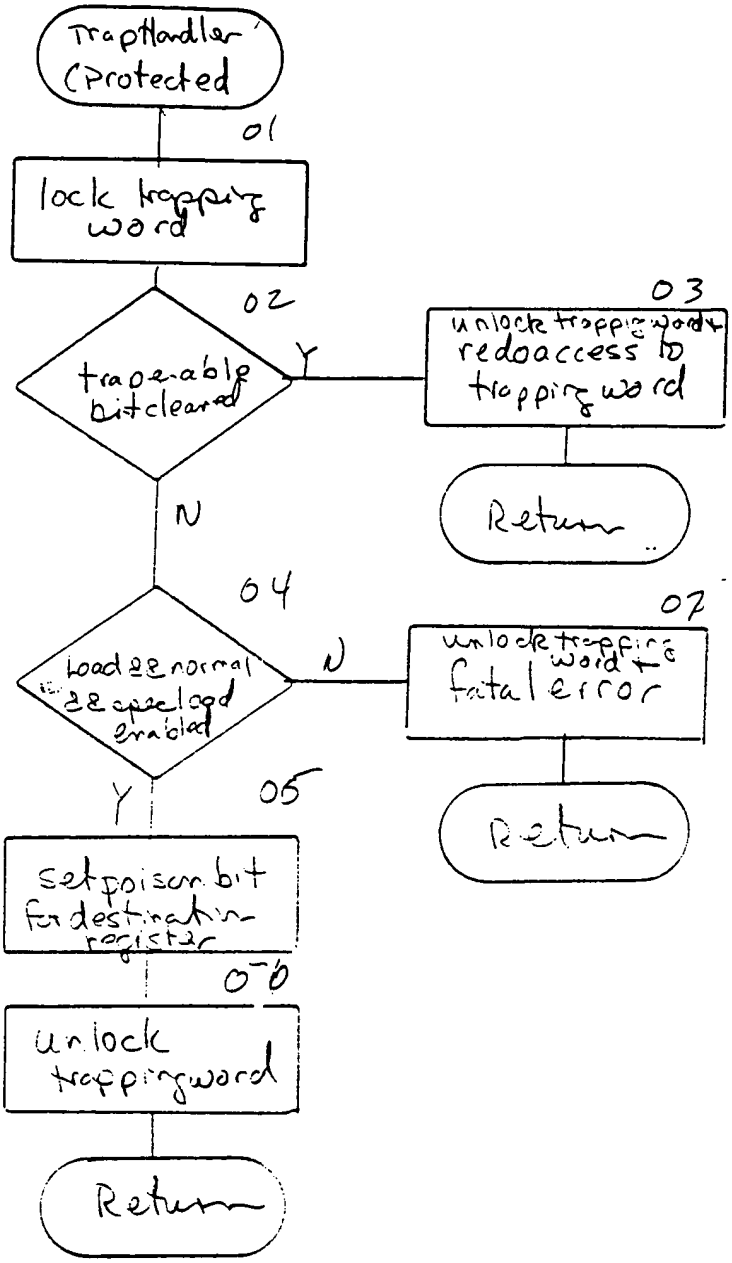

TrapHandler (Protected
01
lock trapping word
02
trap-enable bit cleared
Y
03
unlock trapping word + redo access to trapping word
Return
N
04
load & normal & speculative load enabled
N
07
unlock trapping word + fatal error
Return
Y
05
set poison bit for destination register
06
unlock trapping word
Return

Fig 10

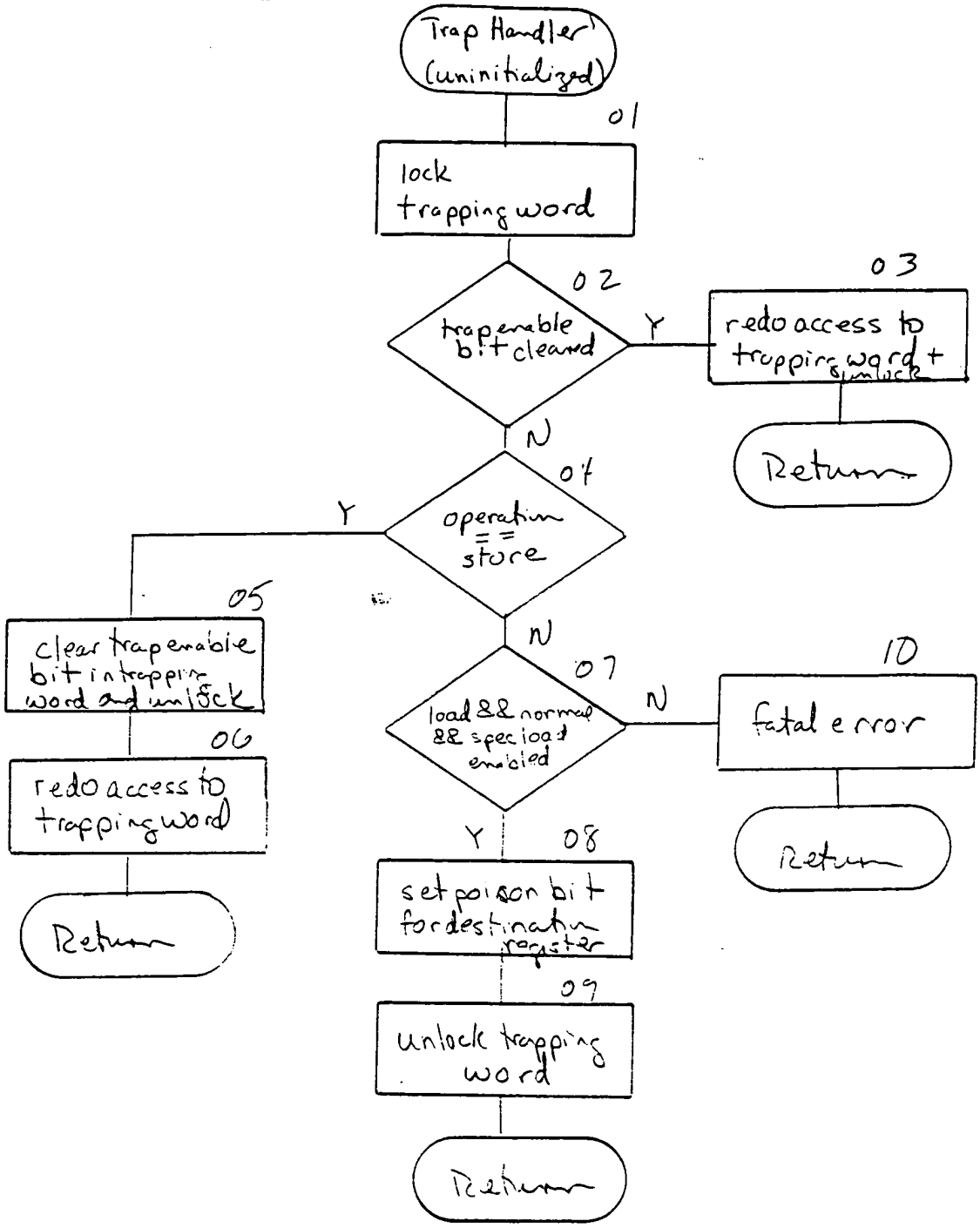

Trap Handler (uninitialized)
01
lock trapping word
02
trap enable bit cleared
Y
03
redo access to trapping word + unlock
Return
N
04
operation == store
Y
05
clear trap enable bit in trapping word and unlock
06
redo access to trapping word
Return
N
07
load && normal && spec load enabled
N
10
fatal error
Return
Y
08
set poison bit for destination register
09
unlock trapping word
Return

Fig 11

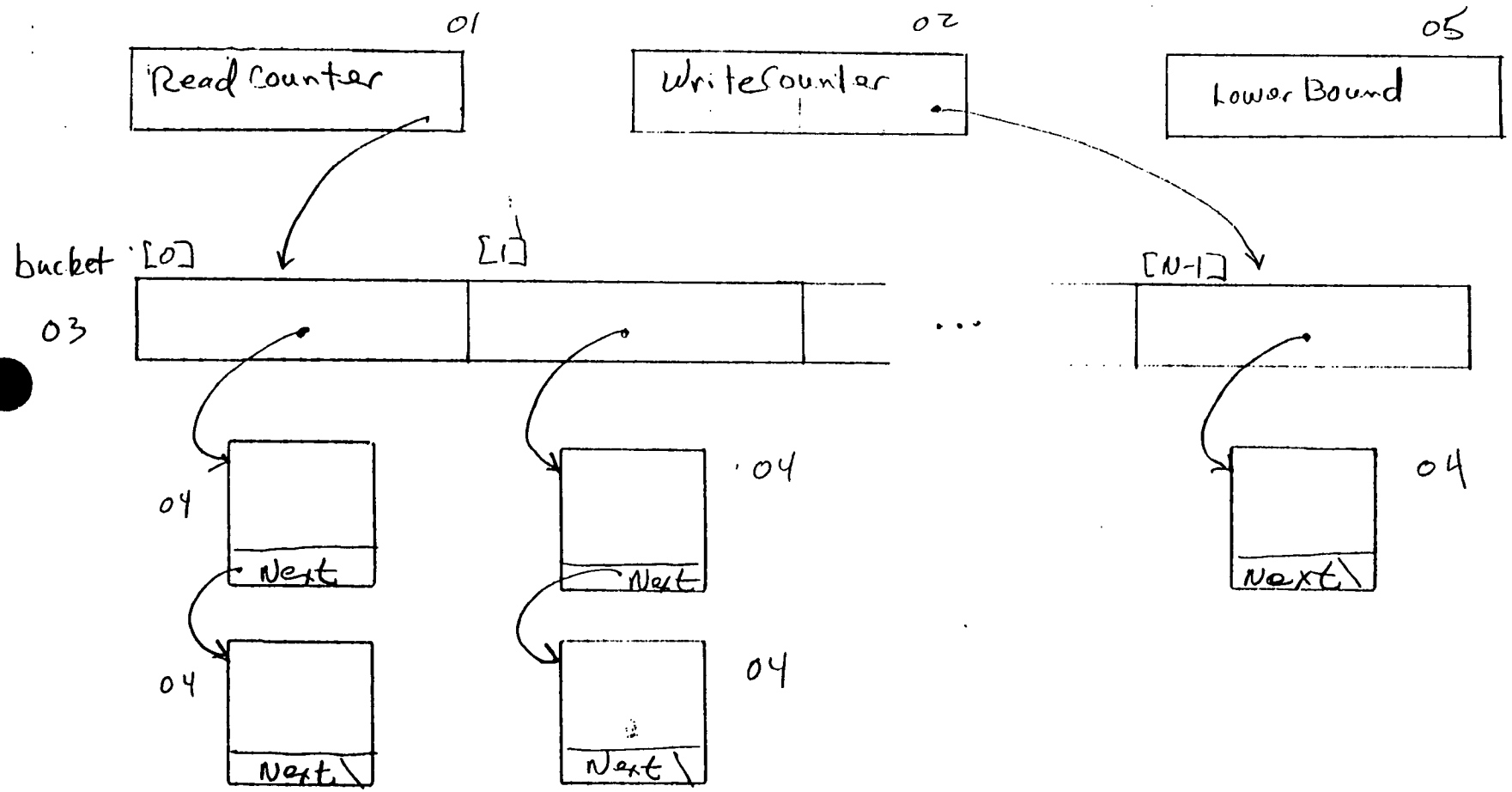

01
Read Counter
02
Write Counter
05
Lower Bound
bucket [0]
[1]
[N-1]
03
04
Next
04
Next
04
Next
04
Next
04
Next

Fig 12

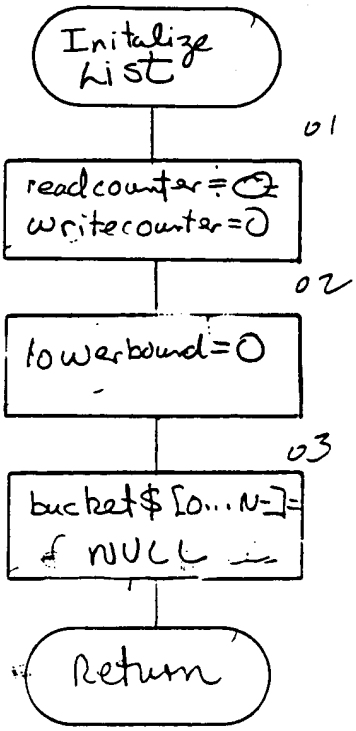

Initalize List
01
readcounter=0
writecounter=0
02
lowerbound=0
03
bucket$[0...N-1]=
NULL
Return

Fig 13

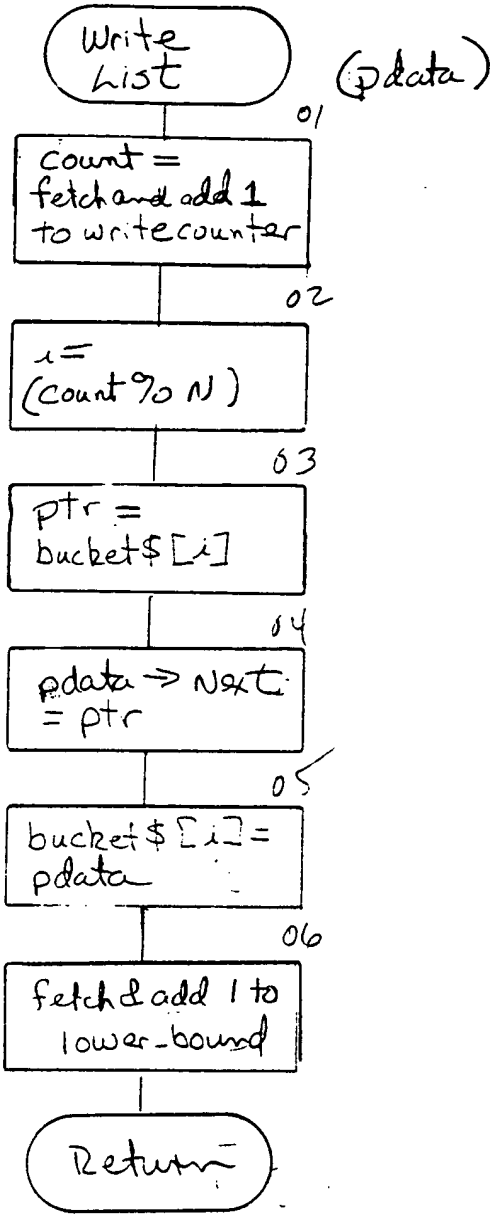


Fig 14

6,952,736 - 09/25/2005

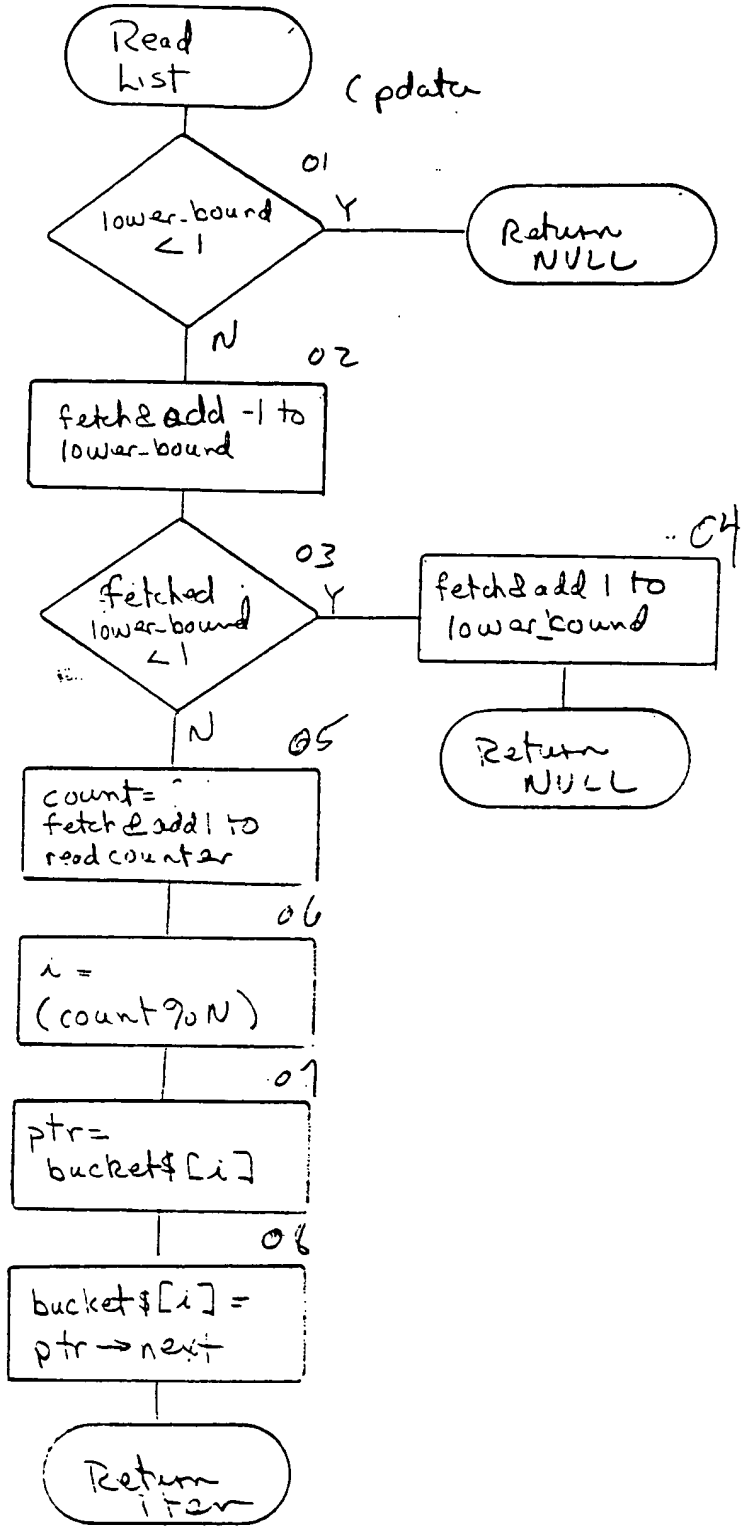

Read list
(pdata
01
lower_bound < 1
Y
Return NULL
N
02
fetch&add -1 to lower_bound
03
fetched lower_bound < 1
Y
04
fetch&add 1 to lower_bound
Return NULL
N
05
count= fetch&add 1 to read counter
06
i = (count % N)
07
ptr= bucket$[i]
08
bucket$[i] = ptr → next
Return item

Figure 15

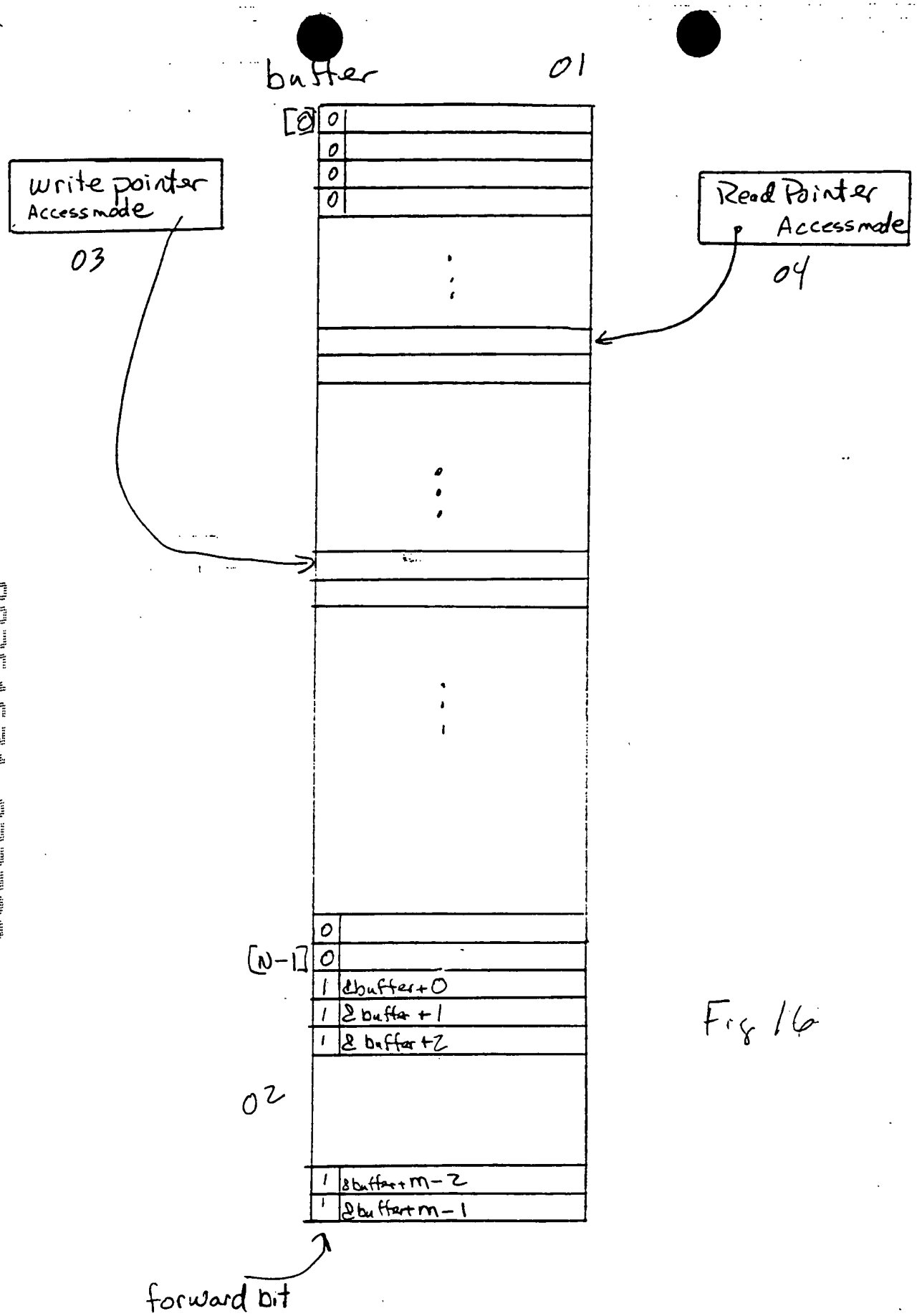

buffer
01
[0]
0
0
0
0
write pointer
Access mode
03
Read Pointer
Access mode
04
[N-1]
0
0
1 &buffer+0
1 &buffer+1
1 &buffer+2
02
1 &buffer+m-2
1 &buffer+m-1
forward bit

Fig 16

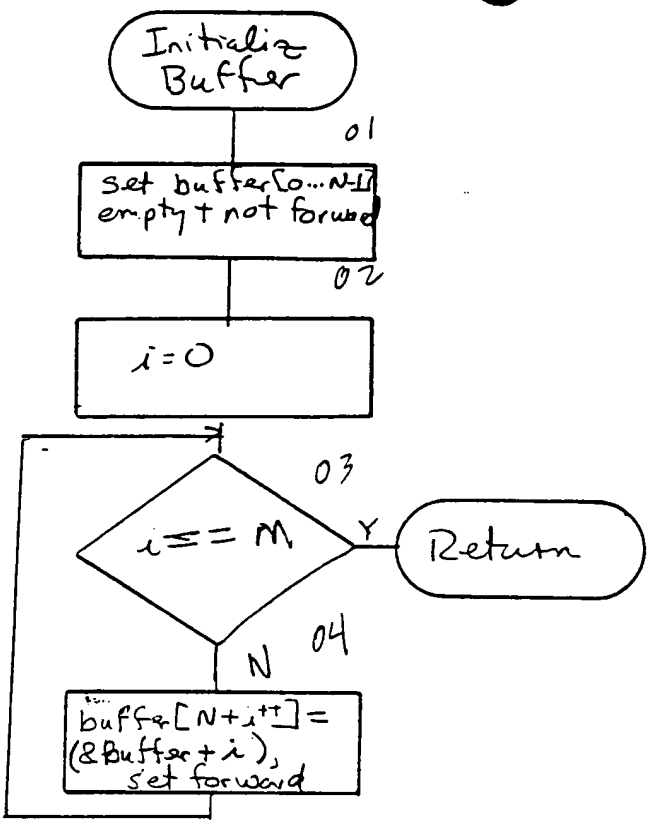
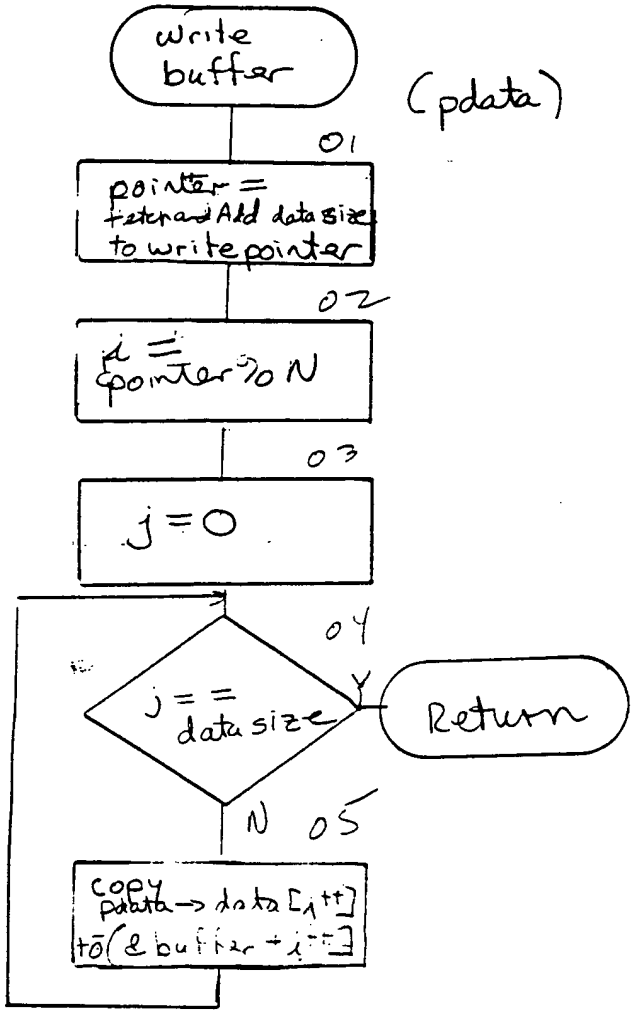

Initialize Buffer
01
set buffer[0...N-1] empty + not forward
02
i=0
03
i == M
Y
Return
N
04
buffer[N+i++] = (&Buffer+i), set forward

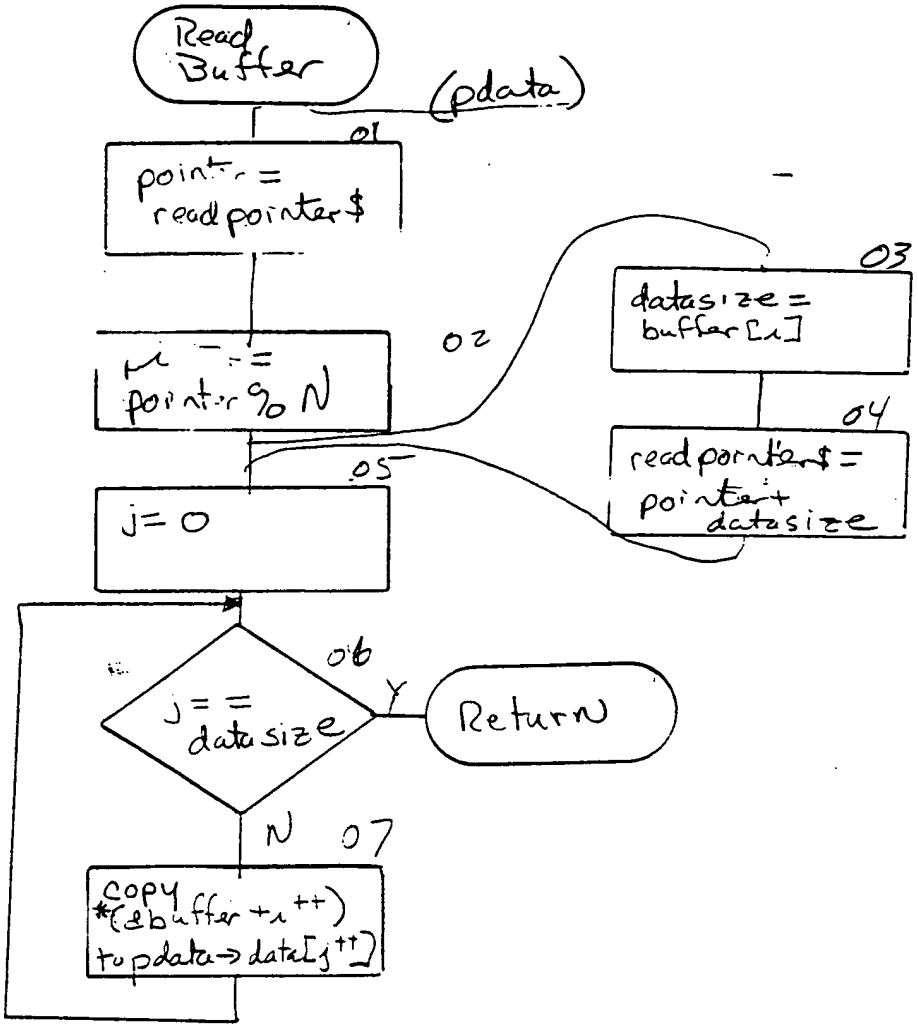
Fig 17

Fig 18



8,595,459 8,595,459

Fig 19


Read Buffer
(pdata)
01
pointer = readpointer$
02
pointer % N
03
datasize = buffer[i]
04
readpointer$ = pointer + datasize
05
j = 0
06
j == datasize
Y
Return
N
07
copy *(buffer+i++) to pdata->data[j++]

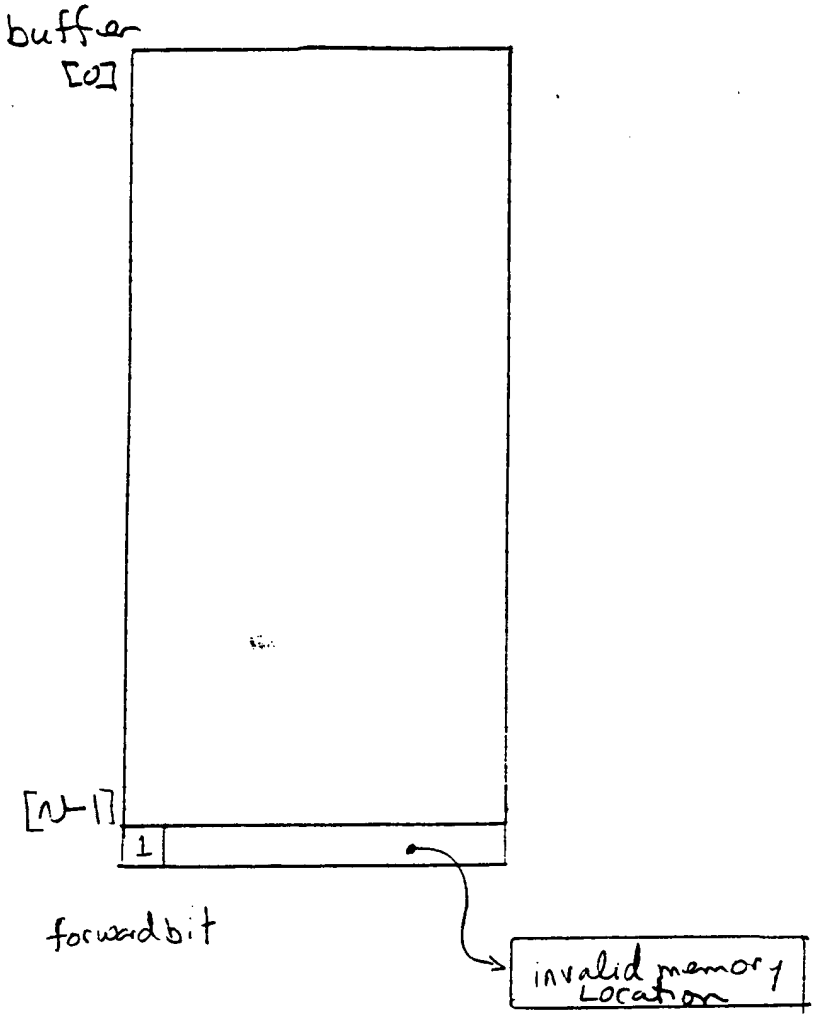


Figure 20

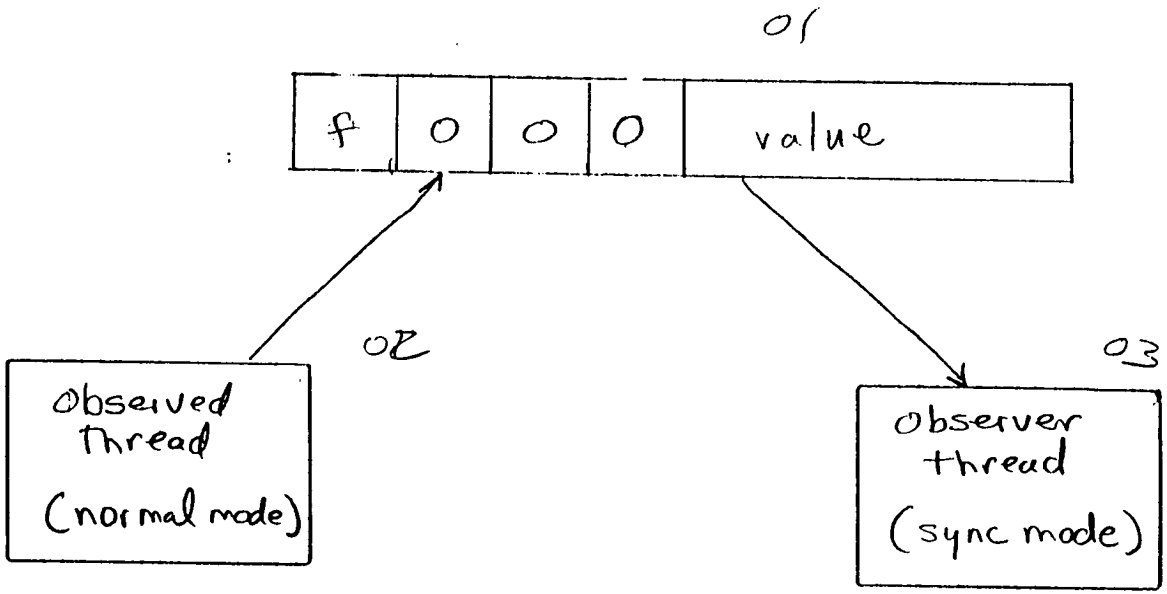

01
f
0
0
0
value
02
03
Observed thread
(normal mode)
Observer thread
(sync mode)

Fig 21

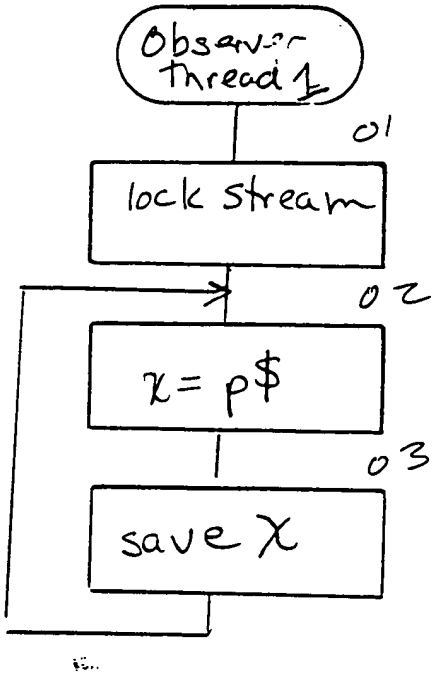


Fig 22

6,925,468

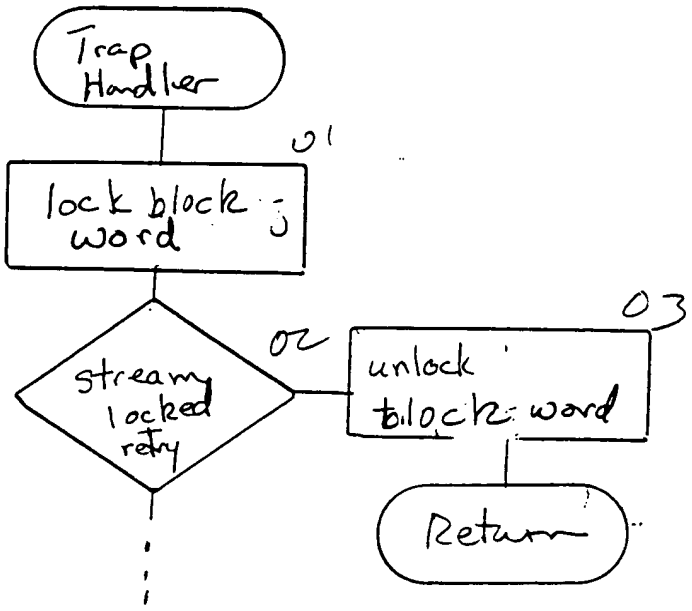


Figure 23

0960-1360-0000

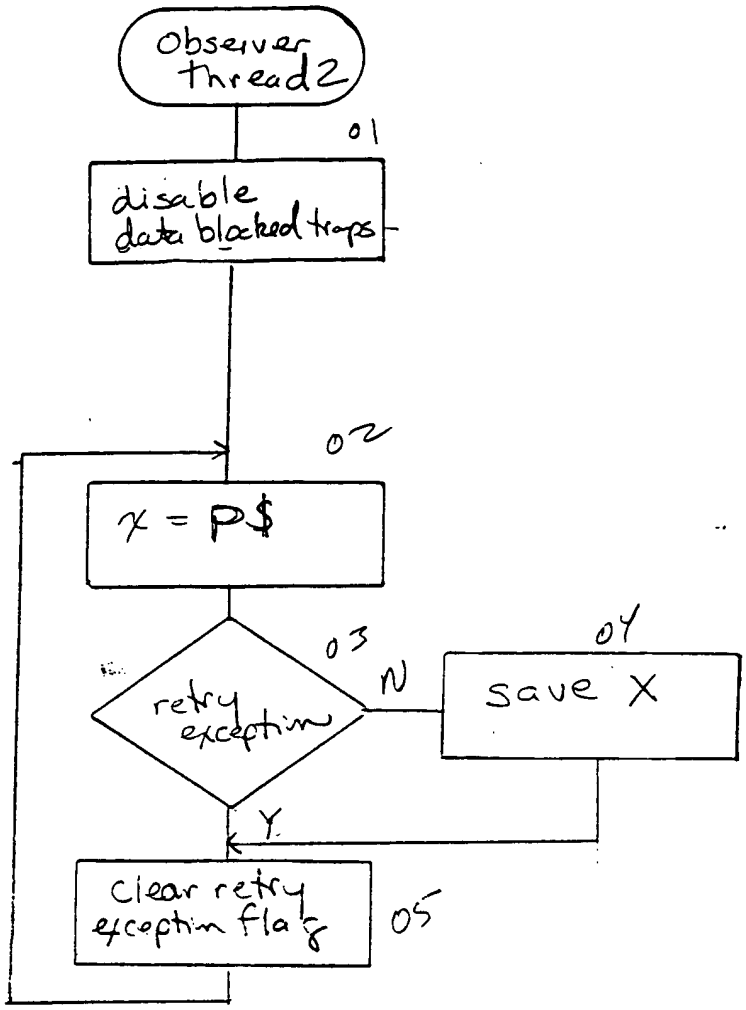


Fig 24

09/976,264

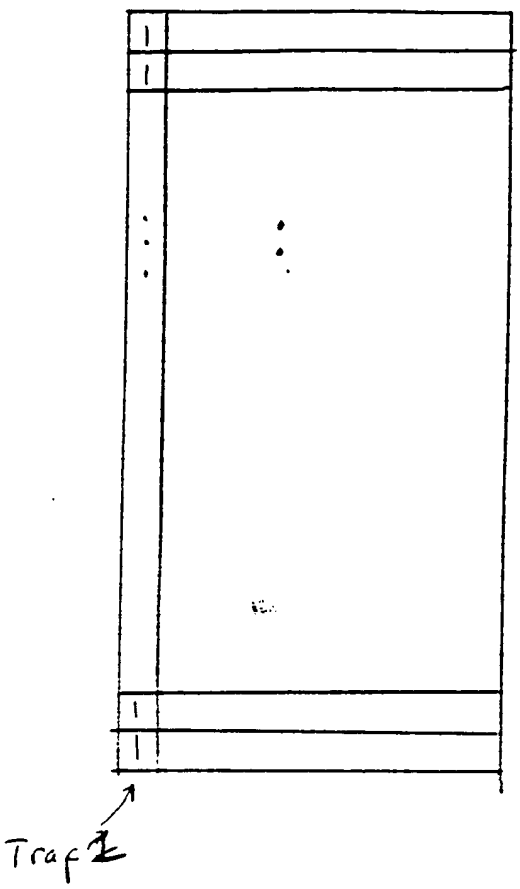


Figure 25